AMENDMENTS TO THE SPECIFICATION

Please delete and replace paragraph [0026] as follows. The replacement paragraph with changes relative to the previous version of these paragraphs in accordance to 37 C.F.R. 1.121(b)(1)(ii) is provided below. The text of these replacement paragraphs replaces all prior versions of the correspondingly numbered paragraphs in the present application. (See, e.g., MPEP 714).

[0026] The second step of the method consists in updating the image model (the set of all atoms) in order to take into account the geometric deformations that have occurred between the reference and the current frame. Clearly, since the model is based on geometric transformations, updating its atoms allows for adapting to smooth local distortions (translations, rotations, scales are common examples). In order to compute this update, we assume that the deformed model is close enough to the reference model. We thus have to search for new atoms parameters in the proximity of the previous solution. This is performed by means of a local optimization procedure trying to minimize the mean square error between the updated model and the current frame (FIG. 4, where three successive schematic updates of basis functions (atoms) inside a sequence of frames are represented). The updated atom parameters are then the solution of:

$$\underset{\{c_n, \gamma_n\}}{\mathrm{ArgMin}} \left\{ \left\| \sum_n c_n g_{\gamma_n} - I_t \right\| \right\},$$

where the optimization method for frame I_t at time t is initialized with the atom parameters corresponding to the solution at time t-1 or to the reference frame (the I frame) in order to avoid error propagation. This problem is a non-convex, non-linear, differentiable optimization problem (see Dimitri P. Bertsekas (1999) Nonlinear Programming: 2nd Edition. Athena Scientific ~~http://www.athenasc.com/nonlinbook.html~~, the content of which is incorporated herein by reference), which can be solved using various algorithms such as quasi-Newton methods, combined with line-search or trust-region globalization techniques (see Conn A., Gould N. & Toint Ph. (2000) Trust Region Methods. SIAM ~~http://www.fundp.ac.be/.about.phtoint/pht/trbook.html~~, the content of which is incorporated herein by reference), in order to identify a local optimum.

AMENDMENTS TO THE SPECIFICATION

A clean copy of paragraph [0026] as amended appears below.

[0026] The second step of the method consists in updating the image model (the set of all atoms) in order to take into account the geometric deformations that have occurred between the reference and the current frame. Clearly, since the model is based on geometric transformations, updating its atoms allows for adapting to smooth local distortions (translations, rotations, scales are common examples). In order to compute this update, we assume that the deformed model is close enough to the reference model. We thus have to search for new atoms parameters in the proximity of the previous solution. This is performed by means of a local optimization procedure trying to minimize the mean square error between the updated model and the current frame (FIG. 4, where three successive schematic updates of basis functions (atoms) inside a sequence of frames are represented). The updated atom parameters are then the solution of:

$$\mathop{\mathrm{ArgMin}}_{\{c_n,\gamma_n\}} \left\{ \left\| \sum_n c_n g_{\gamma_n} - I_t \right\| \right\},$$

where the optimization method for frame I_t at time t is initialized with the atom parameters corresponding to the solution at time t-1 or to the reference frame (the I frame) in order to avoid error propagation. This problem is a non-convex, non-linear, differentiable optimization problem (see Dimitri P. Bertsekas (1999) Nonlinear Programming: 2nd Edition. Athena Scientific, the content of which is incorporated herein by reference), which can be solved using various algorithms such as quasi-Newton methods, combined with line-search or trust-region globalization techniques (see Conn A., Gould N. & Toint Ph. (2000) Trust Region Methods. SIAM, the content of which is incorporated herein by reference), in order to identify a local optimum.